

WHAT IS CLAIMED IS:

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1. An exposure apparatus comprising:  
a projection optical system which projects a pattern of a first object to a second object by using an exposure beam in order to transfer the pattern from the first object onto the second object;  
a diaphragm which sets a numerical aperture of said projection optical system; and  
a mechanism which keeps temperature of said diaphragm substantially constant during an exposure operation by said projection optical system.
  2. An apparatus according to Claim 1, wherein said mechanism comprises a fluid circulation system, which is provided with said diaphragm, in which a temperature controlled fluid circulates.
  3. An apparatus according to Claim 2, wherein said mechanism controls the temperature of said diaphragm to be almost the same as that of said projection optical system, during the exposure operation.
  4. An apparatus according to Claim 3, further comprising a constant temperature system for said projection

5. An apparatus according to Claim 1, wherein said mechanism comprises a Peltier element.

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8. An apparatus according to Claim 7, wherein said sensor is provided on said diaphragm, on a side facing the second object.

10. An apparatus according to Claim 1, wherein said diaphragm comprises a turret having a plurality of openings.

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projecting, through a projection optical system, a  
pattern of a reticle to a wafer by using an exposure beam,  
in order to transfer the pattern from the reticle onto the  
wafer;

keeping temperature of the diaphragm substantially constant during an exposure operation by the projection optical system; and

13. A method according to Claim 12, wherein said keeping step comprises keeping the temperature of the diaphragm by circulating a fluid proximate to the diaphragm.

14. A method according to Claim 13, wherein the temperature of the diaphragm is kept to be almost the same as that of the projection optical system, during the



A method according to Claim 12, comprising a turret having a plurality of nozzles.

A method according to Claim 12, comprising a resist processing step comprising a resist process.

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